

WARTY DYSKERATOMA

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Abstract. A case is reported of a 53-year-old woman, who had had for one year a wart-like papillomatous lesion on the alveolar process in the region corresponding to +8. The remaining mucosa exhibited a normal clinical picture. The patient's general health was satisfactory and no skin manifestations of interest were apparent. The lesion was extirpated and examined histologically and microradiographically and was found to have histopathological characteristics of the same kind as in warty dyskeratoma. The discussion is concerned with aetiological factors and with problems of differential diagnosis.

Key words: Warty dyskeratoma; Case report; Human oral mucosa. Light microscopy; Microradiography.

Warty dyskeratoma or dyskeratoma verruciformis is a benign tumour which usually occurs in the form of a solitary, well circumscribed and wart-like lesion on the scalp, face or neck, or even on the back, chest, abdomen or extremities, occasionally also in the oral cavity (24). The disease was first described by Allen (1) and Helwig (12) under the name "isolated Darier's disease", since its histopathological picture largely resembled that found in Darier's disease or dyskeratosis follicularis—a dominant hereditary skin disease which preferentially manifests itself in the form of wart-like papules on those areas of skin where there are sebaceous glands (10).

Warty dyskeratoma has been reported to occur in the oral mucosa too (11, 24). In view of the paucity of cases reported in the literature, and of the problems of differential diagnosis which may arise owing to the limited experience possessed of this type of tumour, it was considered worthwhile to report a case of warty dyskeratoma in the oral cavity.

CASE REPORT

The patient, a 53-year-old woman, was referred to the Department of Oral Surgery of the Regional Hospital, Linköping, for a mucosal lesion in the region corresponding to +8.

For one year the patient had been able to feel with her tongue a lesion situated on the alveolar process distal to +8. The patient's general state of health was normal and no skin manifestations of interest were found; nor was there any hereditary background to the lesion.

The patient had normal dentition in the upper jaw and her dental status was satisfactory. Clinical inspection revealed a 5 × 5 mm leukoplakia-like lesion with a papillomatous, wart-like appearance on the alveolar process distal to +8. The remaining oral mucosa revealed a normal clinical picture. No lymph glands were palpable. X-ray failed to reveal any abnormality.

The lesion was extirpated in its entirety under local anaesthesia (2% carbocaine with adrenalin 1/200,000). The edges of the wound were sutured.

The extirpated tissue was fixed in 10% neutral, buffered formalin *a.m.* Lillie (16), cut into 6 µm thick serial sections and stained with Mayer's haematoxylin-eosin, Weigert's haematoxylin/van Gieson, and PAS *a.m.* McManus.

Some of the sections were used for microradiography on the principles for contact microradiography presented by Engström & Lindström (7) and Lindström (17). The X-ray tube was designed by Engström & Lundberg (8). The voltage was 3.0 kV and amperage 200 mA. The emitted, continuous X-ray spectrum was filtered through a thin aluminium filter. With the voltage and thickness of filter used, most of the emitted X-ray quanta had wavelengths between 8 and 11 Å (19). The contrasts on the developed microradiogram were caused by variations in the dry weight distribution of the various organic tissue components.

For the histological production of the microradiograms the technique used was that described by Engström et al. (9). The tissue sections were placed at a distance of about 55 mm from focus, which was about 0.1 mm in diameter.

HISTOPATHOLOGICAL AND MICRORADIOGRAPHIC FINDINGS

The sample consists of a well delimited soft tissue tumour which grows down from the epithelium into the connective tissue. The piece of tissue is covered with a hyperparakeratotic and hyperorthokeratotic stratified squamous epithelium exhibiting acantho-

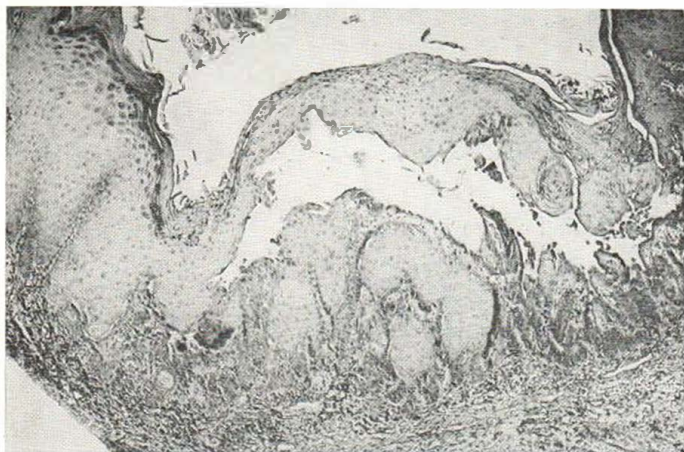


Fig. 1. Through a papillomatous epithelial hyperplasia an invagination has been formed, the sides of which are lined with orthokeratotic stratified squamous epithelium. The bottom consists of a keratin plug exhibiting hyperparakeratosis, dyskeratosis and acanthosis. Under the horny plug a lacuna is seen suprabasally. Villi-like cell accumulations lined with a single layer of cubic cells are seen to protrude into the lacuna. Haematoxylin-eosin, $\times 75$.

sis and papillomatous hyperplasia (Fig. 1). The surface layer appears on the microradiograms as a white band, well defined against the underlying layer of cells, indicating a high dry weight concentration (Fig. 2). Through the excessive cornification and the papillomatous hyperplasia, several lobules or invaginations are observable, the sides of which are coated with an orthokeratotic stratified squamous epithelium and the bottom of which consists of a keratin plug exhibiting hyperparakeratosis, dyskeratosis and acanthosis (Figs. 1, 2 and 3). A distinct stratum corneum and stratum granulosum are observable in the lateral boundary of the lesion, but are entirely lacking within the actual keratin plug (Fig. 1). The parakeratotic plug, which has a larger mass than underlying cells, exhibits vacuolizations of low dry weight concentration (Fig. 4). The nucleus usually has a lower dry weight than the surrounding cell cytoplasm (Fig. 4). Under the horny plug, suprabasally situated lacunae or vesicles are

observed (Fig. 1). Papillomatous, villi-like cell accumulations lined with a single layer of cuboid basal cells can be seen to proliferate into the lacunae and almost to obliterate their lumina (Fig. 5). Centrally in these connective tissue papillae, collagenous fibrils, capillaries and occasional inflammation cells are seen. Acantholytic and dyskeratotic cells exhibiting a premature partial cornification in the form of, inter alia, horny pearls are observable in the tissue areas around the lacunae (Figs. 5, 6).

Two characteristic types of cell are also seen, namely corps-rond-like and grain-like cells. The "corps ronds" are large cells with a basophilic nucleus and which are surrounded by a hyaline-like, eosinophilic and often circular cytoplasm (Fig. 3). In some cases the nucleus may be entirely dissolved and has then been replaced by keratin masses of high dry weight concentration (Fig. 4). The "grains" resemble parakeratotic cells but are rather larger and in some cases have an elongated, basophilically

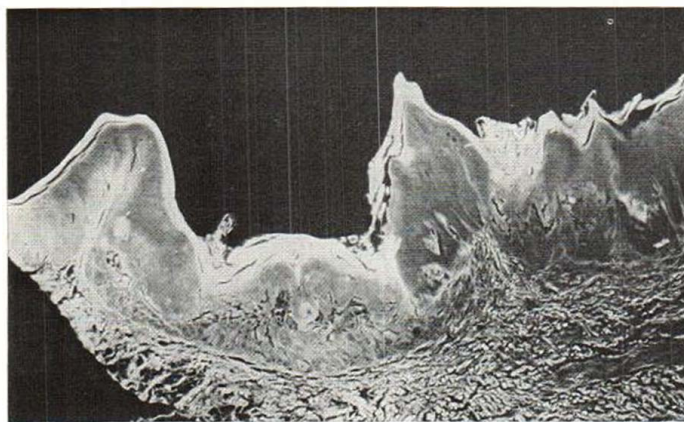


Fig. 2. Microradiogram of epithelial invagination. The superficial layer of the epithelium appears as a white band, well delimited from the underlying layer of cells, indicating a high dry weight concentration. $\times 55$.

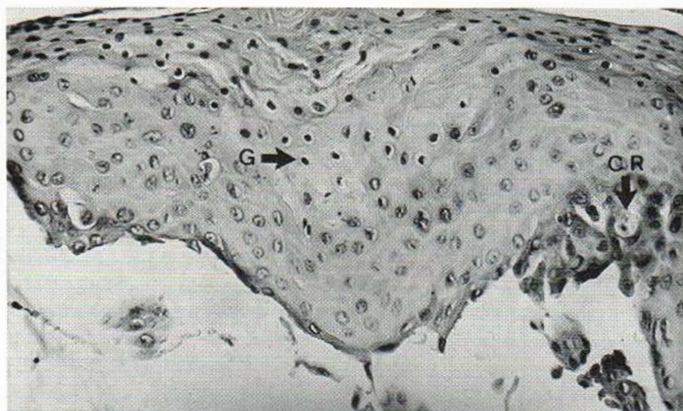


Fig. 3. The horny plug exhibits hyperparakeratosis, dyskeratosis and acanthosis. "Corps ronds" (C.R.) and "grains" (G.) are seen. Haematoxylin-eosin, $\times 215$.

stained and often pyknotic nucleus which in most cases is surrounded by a narrow cytoplasmic zone (Fig. 3). These cells may have the form of dyskeratotic cells in the horny layer, or of dyskeratotic and acantholytic cells within the lacunae.

A moderate, chronic, non-specific inflammation is seen in the connective tissue (Fig. 1). The boundary between epithelium and connective tissue is sharp, the mitotic activity low, and there is no evidence of infiltrative growth or of malignancy.

DISCUSSION

The advantage of using ultrasoft X-rays for studying the keratinization in epithelium of the human oral mucosa was demonstrated by Anneroth (2, 3). Morphological and chemical changes occur in the tissue during the histological treatment of the kind employed (6, 21). Therefore, the morphological and chemical status of the tissue sections do not correspond to that *intra vitam*, presumably because most

of the lipids, carbohydrates and electrolytes have been dissolved from the tissue specimens during the histotechnical procedure.

These factors also affect the evaluation of the dry mass distribution in the microradiographs. However, the latter still provide valuable information concerning the morphological localization of the nucleic acids and proteins present in the tissue sections. Proteins constitute the main part of the roentgen-absorbing material. As keratin has a high dry mass and consequently appears as a dense area in the microradiographs, the contact microradiographic technique using ultrasoft X-rays is a very suitable method for morphological investigation of changes in the dry mass concentration at warty dyskeratoma, where a disturbance in the keratinization process has occurred.

Darier's disease (dyskeratosis follicularis) is a dominant, autosomal disease manifesting itself as hyperkeratotic papules which, apart from in the skin, occur dispersed in the mucosa of the vulva, vagina, rectum, larynx, pharynx and in the oral cavity. The

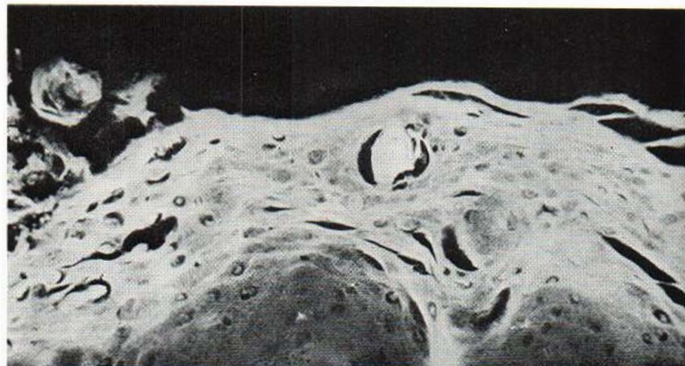


Fig. 4. Microradiogram of the horny plug. The plug has a higher dry weight concentration than the underlying layer of cells, and exhibits parakeratosis and dyskeratotic cells with vacuolizations. The nucleus usually has a lower dry weight concentration than the surrounding cytoplasm. Microradiogram, $\times 300$.

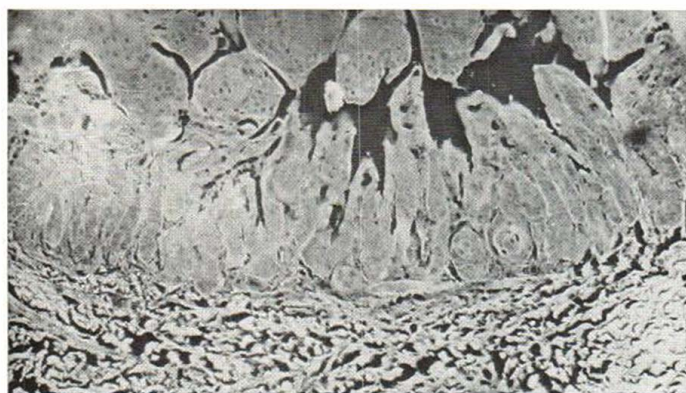


Fig. 5. Microradiogram of papillomatous, villi-like cell accumulations lined with a single layer of cubic basal cells which proliferate into the lacuna and nearly obliterate its lumen. Occasional horny pearls are seen with higher dry weight concentration than surrounding cells. Microradiogram, $\times 100$.

oral lesions are usually about 1–3 mm in size and in most cases involve the hard and soft palate.

Warty dyskeratoma or dyskeratoma verruciformis is a rarely occurring, solitary lesion on the skin or in the oral mucosa and which resembles Darier's disease clinically and histopathologically (23). Gorlin & Peterson (11) were the first to report a case of warty dyskeratoma—in the oral mucosa in a 45-year-old man.

The aetiology of warty dyskeratoma is unknown. Szymanski (22) and Graham & Helwig (10) reported virus to be the probable cause. Szymanski (22) considered the virus to be closely allied to that found in warts, while Graham & Helwig (10) presumed it to have a special predilection for pilo-sebaceous structures and that it had the ability to destroy hair and sebaceous glands.

Nor is the cause of warty dyskeratoma in the oral mucosa known. Heterotopic "pilo-sebaceous structures" may arise in the oral cavity in relation to Fordyce's spots (20), but Gorlin & Peterson (11), like Tomich & Burks (24), considered it scarcely

probable that warty dyskeratoma arises from pilo-sebaceous structures in the oral mucosa, since such sebaceous glands are extremely rare in the oral mucosa (14). Tomich & Burks (24) serially sectioned their material and found no evidence of sebaceous glands in connection with the lesion. They presumed that "perhaps a virus with an affinity for oral epithelial cells phylogenetically related to and retaining the pluripotentiality of cutaneous epithelium is the etiologic factor responsible for the histopathogenesis of the mucosal warty dyskeratoma".

Tomich & Burks (24) reported three cases of warty dyskeratoma in the oral mucosa, all being men, aged 49–61 years. In two cases the lesions were located in a toothless alveolar process in the lower jaw, in the third case in the palatal, marginal gingiva in the region of +7. The case described in the present paper is, as far as we know, the only one published in which the patient was a woman.

Alternative differential diagnoses of warty dyskeratoma are: Darier's disease; Familial benign pemphigus; Senile keratosis; Squamous epithelial and



Fig. 6. Villi-like cell accumulations lined with a single layer of cubic basal cells. Observe the dyskeratotic cells and occasional horny pearls. The subepithelial connective tissue exhibits a mild lympho- and plasmocytic infiltration. Haematoxylin-eosin, $\times 190$.

basal cell cancer and Naevus syringadenomatosis papilliferous.

Even if the histopathological picture of warty dyskeratoma largely resembles that found in Darier's disease, the clinical picture—as also the absence of autosomal, dominant heredity—of warty dyskeratoma suggests that it is a matter of two separate disease entities. Warty dyskeratoma does not occur as a preliminary stage of Darier's disease.

Warty dyskeratoma and familial benign pemphigus have common histopathological characteristics in the form of parakeratosis, dyskeratosis and suprabasal separation of the epithelium, caused by acantholysis, and a proliferation of villi-like connective tissue papillae into lacunae or vesicles.

From the differential diagnostic aspect, warty dyskeratoma differs from familial benign pemphigus in its usually less pronounced suprabasal separation and the fact that the acantholysis and dyskeratosis are less prominent and are limited chiefly to the basal region. Dyskeratotic cell changes, as also the occurrence of "corps ronds" and "grains", are more prominent in warty dyskeratoma than in familial benign pemphigus.

Jablonska & Chorzelski (13) considered that warty dyskeratoma was associated with senile (actinic) keratosis, since the disease often occurred in elderly patients and exhibited histopathological symptoms of the kind often found in warty dyskeratoma in the form of, inter alia, basal lacunae and dyskeratosis. Metz & Schröpl (18) considered it probable that senile keratosis represented a transitional stage to warty dyskeratoma. Delacrétaz (4, 5), however, considered there to be no correlation between these two affections, since cases of warty dyskeratoma had been found in the lower part of the hair-follicle, while the overlying skin was of normal appearance.

Warty dyskeratoma, like naevus syringadenomatosis papilliferus or syringocystadenoma papilliferum, grows down from the surface and forms invaginations. Lacunae containing villi also occur. A horny plug may be present, but corps ronds or grains do not exist in naevus syringadenomatosis papilliferus. In the latter disease the cavities and villi are lined with double rows of cells, whereas the villi-like connective tissue papillae of warty dyskeratoma are covered with a single layer of cells. The cells which line the cystic cavity in naevus syringadenomatosis papilliferus, furthermore, exhibit decapitation secretion, which has not been observed in warty dyskeratoma. Whereas in warty dyskeratoma there is a

mild chronic inflammation in a narrow zone round the tumour, in the sweat gland tumour there is a pronounced infiltration of plasma cells.

Jablonski & Chorzelski (13) spoke of the possibility of a transition from warty dyskeratoma to a dyskeratotic cancer lesion. Lever (15) classifies warty dyskeratoma as a precancerous tumour, but recognizes at the same time that no case of warty dyskeratoma in the skin has proceeded to a malignant stage. All cases of warty dyskeratoma reported in the oral mucosa, furthermore, have exhibited a benign dyskeratosis with no sign of malignity.

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